29 November 1966

Mr. T. Nelson, Systems Consultant
Box 1546
Poughkeepsie, New York 12603

Dear Sir:

This letter is written in response to your request for additional information on Fairchild's solid state Digital Data Retrieval System which was described in the September 1966 issue of Computer Design. The Data Retrieval System described is an outgrowth of Fairchild's Film Data Annotation System. This Annotation system adds MIL-STD-782B information to the film during the initial acquisition.

We are enclosing two (2) photographs of the Digital Data Retrieval System for your information. The console on the left of photograph #1 is the Fairchild Data Retrieval System, and the cabinet on the right is a standard IBM 519 Punch Unit, which is being used to punch and print the digital data being retrieved from the film onto cards. Photograph #2 is a closeup view of the film transport of the Fairchild system. The equipment on top of the cabinet is a standard rewinder, enabling the operator to rewind the film simultaneously as the retrieval system is in operation. Also, we are enclosing the Fairchild original press release, the document from which excerpts were taken and published in Computer Design.

The system pictured was designed for 70mm film only. Presently we are developing a next generation system which will read various digital data formats on various size films from 70mm up to 9-1/2 inch.

Although the systems discussed in this letter are aimed primarily at annotating and reading digital data such as called out in the MIL-STD-782B specification, the basic technology is also adaptable to many other applications. If we can assist you further by answering questions relating to your specific applications, please do not hesitate to contact the undersigned at 516-WE 1-4500, Ext. 585.

Very truly yours,

M. Stern
Sales Manager, Data Processing
& Controls

MS/cc
encls.

FAIRCHILD

SPACE AND DEFENSE SYSTEMS

A DIVISION OF FAIRCHILD CAMERA AND INSTRUMENT CORPORATION

300 ROBBINS LANE, SYOSSET, L. I., N. Y. 11791

(Release #2343-7-66)

FOR IMMEDIATE RELEASE

FIRST SOLID-STATE DATA RETRIEVAL SYSTEM

READS DIGITALLY CODED AERIAL FILM

SYOSSET, NEW YORK - The first digital data retrieval system to incor-
porate a solid-state data block reader has been produced here by Fairchild
Space and Defense Systems, a division of Fairchild Camera and Instrument
Corporation. The advanced system automatically reads the information
annotated on aerial photographic film and transfers it to punch cards with
greater accuracy than heretofore possible.

Key element of the 70mm film reader is its unique solid-state sensor.
Consisting of a linear array of silicon photodiodes, it can read the digitally
coded data on positive transparency prints up to 250 feet in length at speeds
of 75 feet per minute or faster if desired.

Spaced .006 inches apart, the photodiodes are fabricated within a
single silicon crystal using techniques pioneered and developed by the Fair-
child Semiconductor division. The extreme uniformity of performance
achieved by these devices produces the same output signal for a given film
density regardless of its position in the array. Fairchild micrologic
circuitry is used almost exclusively in the film reader's electronics.

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The digitally coded data block is located in the upper margin of the positive film and parallel to its length. The reader's film transport limits film wander to less than .005 inches. However, data block movement within the film is compensated for by switching the proper sensor elements along the array as the film advances.

The sensor array views the data block at a 1:1 magnification through a one inch focal length lens with an aperture of f/1.9. A tungsten projection lamp with dimmer control serves as the light source, illuminating the film gate through a condenser and reflector lens.

The wander correction information is transmitted to the data block locator which locks on the block's index bits. These are checked for size and density within specification limits before their acceptance as valid. The data then is transferred to the data register where it is correlated with information from previous blocks.

Should the digital data be questionable, the film transport stops the block in the 3X viewing section of the reader. Here it is compared against the data register indicators and manual correction inserted if required. Limits for the variation in the information elements of the data block can be programmed through the reader's control panel. Validated blocks advance a counter for transmission to the output station together with the content of the data block.

The system's IBM 519 unit has the capability of punching at a rate of 100 cards per minute or one card every .6 seconds. The transferred data consists of a 29-bit binary word and 4 sets of 4 lines which may

(more)

contain decimal or alpha character information.

The summary punch activates 12 rows in a sequential order handling information presented on any of the 80 columns. Synchronization of the two units is assured by using the sequentially timed row pulses from the card punch to assure that data from the reader flows into its column positions only when that position is coincident with the desired row.

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